
U. R. S. I.

TABLE DES MATIÈRES — CONTENTS

	Pages
NOTICE : URSI INFORMATION BULLETIN No. 194 AND 195	3
KEEVE M. SIEGEL 1923-1975	4
XVIII URSI GENERAL ASSEMBLY : GENERAL INFORMATION	8
XVIII URSI GENERAL ASSEMBLY : SCIENTIFIC PROGRAMME	8
XVIII ^e ASSEMBLEE GENERALE DE L'URSI : PROGRAMME SCIENTIFIQUE	14
MEETING OF URSI BOARD OF OFFICERS	20
THE URSI REVIEW OF RADIO SCIENCE	34
MICROWAVE SCATTERING AND EMISSION FROM THE EARTH	37
INTERNATIONAL SYMPOSIUM ON INFORMATION THEORY 1974	37
WORLD TELECOMMUNICATIONS FORUM	38
RADIO SCIENCE IN THE USA	39
TEACHING OF ELECTRONIC ENGINEERING	40
CYBERNETICS AND SYSTEMS RESEARCH	41
MEMBER COMMITTEES OF URSI ; URSI COMMISSIONS	42

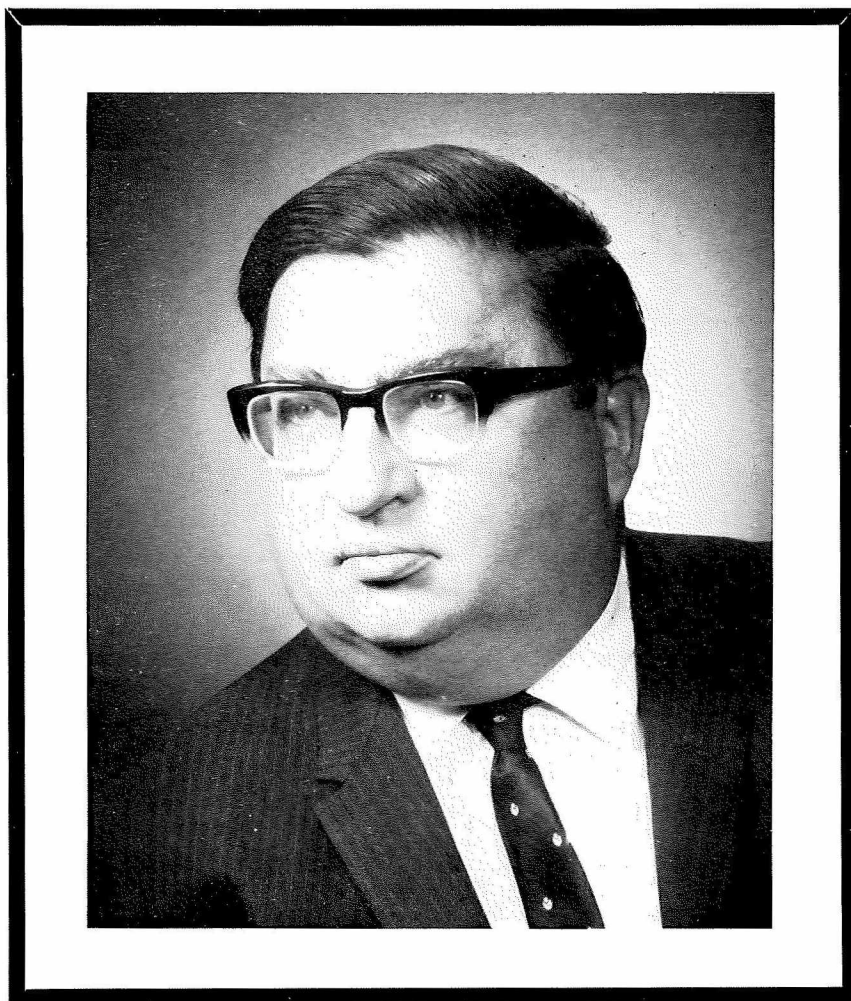
NOTICE : URSI INFORMATION BULLETIN
Nos 194 AND 195

Readers are requested to note that the present issue of the *Bulletin* contains the material for both the March and the June issues for 1975.

The publication of the September issue will be delayed so as to permit the inclusion of the Resolutions adopted by the XVIII URSI General Assembly in August 1975.

KEEVE M. SIEGEL

1923-1975



From time to time, the *URSI Bulletin* records the death of scientists who have been associated with the Union, but it is with particularly deep regret that we must announce the passing of Keeve M. Siegel on 14 March while still in office as Chairman of Commission VI.

Prof. Siegel graduated in physics at Rensselaer Polytechnic Institute in 1948 and obtained his Masters degree in 1950. From 1948 to 1967, he was on the staff of the University of Michigan where he held successive appointments in the Upper Atmospheric Group, and the Radiation Laboratory of the Department of Electrical Engineering. He became Professor of Electrical Engineering in 1957, a post in which he served until his resignation in 1967 when he was appointed as Visiting Professor in the School of Engineering at Oakland University.

Outside the University, he was very active in business life. In 1960, he founded the Conductron Corporation and, later, KMS Industries Inc. of which he was Chief Executive and Chairman of the Board since 1967. For some years he had concentrated much of his effort on the generation of energy by controlled nuclear fusion which he considered to be the most promising source of inexpensive energy in the future. Indeed it was while testifying before the Joint Congressional Committee on Atomic Energy in Washington on 14 March that he collapsed.

Prof. Siegel has been a well-known figure in URSI Assemblies for many years since he was a United States delegate at the General Assembly in Boulder in 1957. He was elected Vice-Chairman of Commission VI in Ottawa in 1969 and became Chairman in Warsaw in 1972. His election to this Commission recognised his broad and active personal interest in electromagnetic theory and its applications in fields such as the theory of radiation from arrays, radar cross-sections and radar absorbing material, as well as propagation through and radiation from plasmas. With the assistance of Professors Knudsen and Stumpers (Vice-Chairmen), Professor Siegel had already arranged the programme and the speakers for the scientific sessions of Commission VI at the URSI Assembly in Lima in August 1975. Even though he will not be present, the participants will without doubt recognise their late Chairman's influence on the choice of topics, but they will regret that he will not be there to intervene in the discussions on the papers presented and also on the future of this key Commission in the context of the reorganisation of URSI.

Those who had the privilege of working with Professor Siegel valued, in particular, his generosity in assisting and encouraging his colleagues and appreciated the trust he placed in the people with whom he cooperated.

* * *

The following personal appreciation of Prof. Siegel has been prepared by Prof. Samuel Silver, Honorary President of URSI, and Chairman of Commission VI from 1953 to 1960.

The world-wide community of radio scientists suffered a great loss in the death of Professor K. M. Siegel on March 14, 1975. To a number of us the loss is a very personal one for he was more than a colleague : he was a loyal, devoted friend to whom one could turn for help at any time and be sure to receive a supportive response. These personal qualities expressed themselves in his devotion to his family and to his origins, and in his devotion and loyalty to his country. The course of action he pursued in his lifetime was set by his concerns about people as well as by his passionate commitment to scientific research.

We met in the early nineteen fifties when he called me about some work I had done on scattering and diffraction. He was then working at the Willow Run Laboratories of the University of Michigan on a wide range of problems of radar cross-sections and upper atmosphere physics. I recall how impressed I was by the then youngster's insight into problems of scattering of electromagnetic waves by spheroids, ellipsoids, cones, etc. : all problems of extremely great mathematical complexity. While others in the field were struggling with analytical difficulties, Prof. Siegel was able by ingenious physical insight to develop radar cross-sections for such complex structures as aircraft. His values for their cross-sections bore up very well under the stringent tests of experimental measurements.

What was even more impressive to me was the breadth of his interests, and the range of problems he could and would tackle simultaneously. His drive and intellectual energy were prodigious. I recall also that in those early days at Willow Run, while he was working on hydrodynamics, he developed a remarkable theory of scaling and similitude for the Navier-Stokes equation. He gave impetus to my own work at Berkeley at the time. Discussions with him motivated me to develop techniques for measuring scattering cross-sections with high precision and accuracy, and we collaborated on the study of the back-scattering from cones and other figures of revolution.

The motivation of serving his country was perhaps most apparent in the areas of research he fostered and supported. One of those was the investigation of arrays of slots on cones. More than any other one person, he was responsible for convincing the Department of Defense of the importance of that field and for enlisting some of the most able people and organizations in its development. A second, more recent venture was the utilization of fusion to develop a resource of energy, a currently critical problem for the United States and for the world as a whole. Many of us in the United States know that he literally gave his life to furthering that endeavor.

When the United States made the “landing of a man on the Moon” a project of national interest and security, Prof. Siegel was among the first to turn attention to the study of the electromagnetic properties of the Moon. He analyzed masses of available data on the radar cross-section of the Moon and applied his earlier theoretical work to developing a model of its surface. He reported some of that work at various meetings of the USA National Committee for URSI and at international meetings and assemblies.

He contributed to the work of URSI Commission VI in a number of ways. His interest in URSI arose from his recognition of the force that the Union exerts in developing the exchange of ideas between scientists of different countries. He was firmly convinced of the effectiveness of such exchanges in alleviating the abrasiveness of international relationships that unfortunately afflicts human society in the large. In 1952 at the URSI Assembly in Sydney, Australia, Dr. R. C. Spencer and Prof. G. A. Woonton conceived the idea of holding an international symposium on electromagnetic theory at McGill University in 1953. It was shortly afterwards that Siegel began to plan a follow-up to the McGill symposium to be held at the University of Michigan. He was prominent in planning the contributions to the McGill Symposium, and the work of his group at Michigan figured prominently in the program. He was instrumental in sparking the interest of the US National Committee in furthering studies of scattering and diffraction, and was a great help to me in maintaining the existence of Commission VI against the opposition of those who were more interested in the geophysically oriented Commissions. Out of our combined efforts, URSI Commission VI developed the ongoing periodic symposia on applied electromagnetic theory which now constitute the outstanding forum in the field. He played a significant part in every General Assembly of the Union since the 1957 Assembly in Boulder, and in every Electromagnetic Theory Symposium since 1953. He contributed to the planning, to the contents of the programs, and to the very difficult task of getting participation from every corner of the earth, even from countries whose political formulas were opposed to free interchange of scientists and scientific information.

It is hardly possible to touch on all of the activities of our friend and colleague. I speak for myself and many, many others in saying that his influence will live on long beyond our days. With his death a significant light in our lives and in the world as a whole was extinguished.

Samuel Silver.

XVIII URSI GENERAL ASSEMBLY

General Information

In mid-May, copies of the Second Announcement concerning the XVIII URSI General Assembly were dispatched from Lima by the Peruvian Organising Committee. Copies have been sent to many individuals whose names are known to the Committee and bulk supplies have been sent to all Member Committees of URSI.

Intending participants may, if they wish, reserve hotel accommodation through the Organising Committee whose address is :

Peruvian Organising Committee,
XVIII URSI General Assembly,
c/o Instituto Geofísico del Perú,
Apartado 3747,
Lima, Peru.

The Committee has made block reservations at the following hotels : Crillon, Bolivar, Lima-Sheraton, Savoy, Maury, Riviera, Columbus and Continental.

Intending participants are invited to note that August is a winter month in Lima. In spite of the low latitude, the average temperature will be about 15° C during the day. As a general rule public buildings have no central heating. However the Peruvian Committee hopes to provide local heating in the lecture rooms at the Catholic University where the Assembly will be held.

XVIII URSI GENERAL ASSEMBLY

Scientific Programme

The scientific programme will include the following types of meeting :

- (a) Sessions of the traditional type organised by one or more of the URSI Commissions. Most of the papers will be presented by invited speakers, but additional short contributions may be introduced during the discussion periods if time permits.
- (b) Three Open Symposia, which will together deal with topics relevant to the whole field covered by Commissions III (Ionosphere), IV (Magne-

tosphere) and VIII (Radio Noise of Terrestrial Origin). Selected papers will be presented by contributors who responded to the Call for papers issued in 1974.

- (c) A half-day Symposium on the teaching of electromagnetics and telecommunication science. Several speakers have been invited to contribute papers.
- (d) Business Sessions of Commissions, and Working Groups.

The numbers used in the timetable (see below) to identify the sessions are as follows :

SESSIONS ORGANISED BY ONE COMMISSION :

I	(Radio Measurements and Standards)	1.1-1.7
II	(Radio and Non-ionized Media)	2.1-2.6
V	(Radio Astronomy)	5.1-5.6
VI	(Radio Waves and Circuits)	6.1-6.8
VII	(Radio Electronics)	7.1-7.2

Business Sessions are indicated by "Bus".

SESSIONS ORGANISED BY TWO OR MORE COMMISSIONS :

I/VII	17.1-17.2	VII/I	71.1
II/VI	26.1	VII/VI	76.1
IV/VIII	48.1-48.5	VII/VI/V	765.1
VI/VII	67.1		

The first figure indicates the Commission which is responsible for the organisation of the Session.

SYMPOSIA :

- A. Radio Waves and the Ionosphere
A.1 - A.12
- B. Non-stationary Signal Analysis
B.1 - B.6
- C. Telecommunications Noise and Interference Environment
C.1 - C.9
- D. The Teaching of Electromagnetics and Telecommunications Science
D.1

SYMPOSIA AND SCIENTIFIC SESSIONS OF COMMISSIONS

AUGUST

Friday, 8

- am A.1 Equatorial ionosphere I : F region
- pm A.1 Equatorial ionosphere II : F-region dynamics and fields

Saturday, 9

- am A.1 Equatorial ionosphere III : E-region irregularities
- pm A.1 Equatorial ionosphere IV : E-region irregularities

Monday, 11

- pm 2 Bus. 1 Business Session
- 3 Bus. 1 Business Session
- 4 Bus. 1 Business Session
- 5 Bus. 1 Business Session
- 6 Bus. 1 Business Session
- 8 Bus. 1 Business Session
- 71.1 Quantum frequency standards, including optical standards

Tuesday, 12

- am 71.1 Quantum frequency standards, including optical standards (continued)
- 2.1 Remote sensing of surface and underground characteristics of the Earth
- 5.1 Solar-system, radio and radar astronomy
- 6.1 Non-planar arrays
- A.2 Artificial heating of the ionosphere and its effects (I)
- B.1 Non-stationary signal analysis : Mathematical aspects
- C.1 Radio system performance models
- pm 1.1 Standard time and frequency transmissions
- 765.1 Microwave acoustics
- A.2 Artificial heating of the ionosphere and its effects (II), followed by Business Session of Working Group III.1
- B.2 Non-stationary signal analysis : Technical aspects
- C.2 Radio noise models

Wednesday, 13

- am 17.1 Laser measurements

- 2.2 Theory and results of studies of the lower atmosphere by acoustic methods
- 5.2 Spectral line observations and techniques
- 6.2 Digital filters
- A.3 Drifts, waves and other irregularities; results and interpretation (I)
- A.4 Global models of the ionosphere, including the International Reference Ionosphere (I)
- B.3 Non-stationary signal analysis : Magnetospheric aspects (I)
- C.3 Man-made radio noise : sources and characteristics
- pm 1.2 Measurements at radio frequencies and at mm and sub-mm wavelengths
- 26.1 Wideband communications systems
- 5.3 High-resolution mapping
- 6.3 Holography and its influence on electromagnetics
- 7 Bus. 1 Business Session
- A.3 Drifts, waves and other irregularities; results and interpretation (II)
- A.4 Global models of the ionosphere, including the International Reference Ionosphere (II), followed by Business Session of Working Group III.6
- B.4 Non-stationary signal analysis : Magnetospheric aspects (II)
- C.4 The undesired signals (interference) environment

Thursday, 14

- am 1.3 Application of radio methods, including those made at laser wavelengths, to scientific measurements
- 6.4 Special problems in scattering and diffraction (I)
- 7.1 Millimetre and sub-millimetre techniques
- A.6 Advances in incoherent scatter (I)
- B.5 Non-stationary signal analysis : Acoustical and radiobiological aspects
- C.5 Atmospheric noise characteristics
- pm 1.4 Automated and computerised measurements
- 76.1 Optical communications : I Devices
- A.6 Advances in incoherent scatter (II), followed by Business Session of Working Group III.8
- A.8 Ionospheric absorption, followed by Joint Business Session of Working Groups III.3 and III.5

- B.6 Non-stationary signal analysis : Astronomical aspects
- C.6 Acquisition and interpretation of sample records of non-stationary signals and noise

Friday, 15

- am 1.5 Interaction of radiofrequency fields with biosystems
- 2.4 Development of models of the atmosphere applicable to absorption due to rain
- 48.1 Coupling of whistler-mode energy in and out of magnetospheric ducts
- 5.4 Accurate position measurements
- 67.1 Optical communications : II Systems
- A.7 D region, including VLF and ELF propagation
- A.5 Ionospheric scintillation effects and F-region irregularities (I)
- pm 1 Bus. 1 Business Session
- 2 Bus. 2 Business Session
- 48.2 Report of Working Group IV.1 on Whistlers in the magnetosphere
- 5 Bus. 2 Business Session
- 6 Bus. 2 Business Session
- 7 Bus. 2 Business Session
- 8 Bus. 2 Business Session
- A.5 Ionospheric scintillation effects and F-region irregularities (II), followed by Business Session of Working Group III.2 and Subgroups III.2.1 and III.2.2.
- D.1 The teaching of electromagnetics and telecommunications science

Monday, 18

- am 1.6 International comparison of standards
- 2.5 Theory and experimental results relating to depolarisation due to rain
- 48.3 Active magnetospheric experiments involving radio and plasma waves
- 5.5 Unresolved continuum sources
- 6.5 Millimetre-wave and optical waveguides
- 7.2 Microwave solid-state devices
- A.10 Data processing in ionospheric research (I), followed by Business Session of Working Group III.4

- A.11 Ionospheric propagation problems in radiocommunication (I)
- C.7 Storms : description and location
- pm 17.2 Josephson junction as an element in electronic measurement systems
- 2 Bus. 3 Business Session
- 48.4 2nd session of Working Group IV.1 on Whistlers in the magnetosphere *or* 2nd Business Session (provisional)
- 5.6 New developments at observatories and laboratories
- 6.6 Special problems in scattering and diffraction (II)
- A.10 Data processing in ionospheric research (II)
- A.11 Ionospheric propagation problems in radiocommunication (II), followed by Business Sessions of Working Groups III.9 and III.10
- C.8 The composite noise and interference environment

Tuesday, 19

- am 1.7 Reports and conclusions of Working Group I.1 on National Standard Laboratories and Working Group I.2 on Electromagnetic pollution
- 2.6 New topics
- 3 Bus. 2 Business Session
- 48.5 New topics
- 6.7 Antennas for satellite communications
- 6.8 Computer simulation of communication systems
- A.12 Ionospheric phenomena related to the magnetosphere, and New topics, followed by second Business Session of Commission III
- C.9 Reports : Working Group on Man-made radio noise; CISPR, CCIR

ADMINISTRATIVE MEETINGS

AUGUST

- Friday, 8
 - am Board of Officers
 - pm Council
- Saturday, 9
 - all day Council
- Sunday, 10
 - am Chairmen (and Vice-Chairmen) of Commissions (Coordinating Committee)

Monday, 11	am	Opening Plenary Meeting
Saturday, 16	am	Council
Tuesday, 19	pm	Closing Plenary Meeting
Wednesday, 20	am	Board of Officers

XVIII ASSEMBLÉE GÉNÉRALE DE L'URSI

Programme scientifique

Le programme scientifique de la XVIII^e Assemblée générale comportera :

- a) Des séances scientifiques du type traditionnel organisées par une ou plusieurs Commissions. La plupart des exposés seront présentés par des conférenciers invités et, si le temps l'autorise, de brèves communications pourront être faites au cours des discussions.
- b) Trois colloques à libre participation dont les thèmes couvriront le domaine des Commissions III (Ionosphère), IV (Magnétosphère) et VIII (Bruit radioélectrique d'origine terrestre). Les communications seront présentées par les auteurs qui ont répondu à l'Appel de communications publié en 1974 et dont les travaux ont été retenus.
- c) Un colloque d'une demi journée sur l'enseignement de l'électromagnétique et de la science des télécommunications. Plusieurs conférenciers ont été invités à faire des exposés.
- d) Les séances de travail des Commissions et des Groupes de travail.

Dans le programme ci-dessous, les chiffres suivants ont été employés pour désigner les différentes séances :

SÉANCES ORGANISÉES PAR UNE COMMISSION:

I	(Mesures et étalons radioélectriques)	1.1-1.7
II	(Radioélectricité et milieux non-ionisés)	2.1-2.6
V	(Radioastronomie)	5.1-5.6
VI	(Ondes et circuits radioélectriques)	6.1-6.8
VII	(Radioélectronique)	7.1-7.2

Pour les séances de travail, le chiffre précédant l'abréviation « Bus » (Business) indique la Commission et celui qui la suit le numéro d'ordre de la séance.

SÉANCES ORGANISÉES PAR DEUX OU PLUSIEURS COMMISSIONS :

I/VII	17.1 - 17.2	VII/I	71.1
II/VI	26.1	VII/VI	76.1
IV/VIII	48.1 - 48.5	VII/VI/V	765.1
VI/VII	67.1		

Le premier chiffre désigne la Commission qui est responsable de l'organisation de la séance.

COLLOQUES :

- A. Les ondes radioélectriques et l'ionosphère
A.1 - A.12
- B. Analyse des signaux non-stationnaires
B.1 - B.6
- C. Le bruit dans les systèmes de télécommunications, et le brouillage dû à l'environnement
C.1 - C.9
- D. L'enseignement de l'électromagnétique et de la science des télécommunications
D.1

COLLOQUES ET SÉANCES SCIENTIFIQUES DES COMMISSIONS

AOÛT

Vendredi 8

- m A.1 Ionosphère équatoriale I : Région F
- am A.1 Ionosphère équatoriale II : Dynamique et champs de la région F

Samedi 9

- m A.1 Ionosphère équatoriale III : Irrégularités de la région E
- am A.1 Ionosphère équatoriale IV : Irrégularités de la région E

Lundi 11

- am 2 Bus. 1 Séance de travail
- 3 Bus. 1 Séance de travail
- 4 Bus. 1 Séance de travail
- 5 Bus. 1 Séance de travail
- 6 Bus. 1 Séance de travail
- 8 Bus. 1 Séance de travail

- 71.1 Etalons de fréquence en électronique quantique, y compris les étalons optiques

Mardi 12

- m 71.1 Etalons de fréquence en électronique quantique, y compris les étalons optiques (suite)
- 2.1 Télédétection des surfaces et caractéristiques du sous-sol de la terre
- 5.1 Radioastronomie et radar astronomie du système solaire
- 6.1 Antennes tri-dimensionnelles
- A.2 Réchauffement artificiel de l'ionosphère et ses effets (I)
- B.1 Analyse des signaux non-stationnaires : Aspects mathématiques
- C.1 Modèles de performance des systèmes radioélectriques
- am 1.1 Emissions de signaux horaires et de fréquences étalon
- 765.1 Acoustique hyperfréquences
- A.2 Réchauffement artificiel de l'ionosphère et ses effets (II); séance du Groupe de travail III.1
- B.2 Analyse des signaux non-stationnaires : Aspects techniques
- C.2 Modèles de bruit radioélectrique

Mercredi 13

- m 17.1 Mesures par laser
- 2.2 Théorie et résultats des études de la basse atmosphère par des méthodes acoustiques
- 5.2 Observations et techniques d'observation des raies spectrales
- 6.2 Filtres digitaux
- A.3 Mouvements, ondes et autres irrégularités; résultats et interprétation (I)
- A.4 Modèles globaux de l'ionosphère, y compris l'ionosphère Internationale de Référence (I)
- B.3 Analyse des signaux non-stationnaires : Aspects magnétosphériques (I)
- C.3 Bruits industriels; sources et caractéristiques
- am 1.2 Mesures faites aux fréquences radioélectriques et en ondes millimétriques et sous-millimétriques
- 26.1 Systèmes de communications à larges bandes
- 5.3 Etablissement de cartes à haute définition

- 6.3 L'holographie et son influence en électromagnétique
- 7 Bus. 1 Séance de travail
- A.3 Mouvements, ondes et autres irrégularités; résultats et interprétation (II)
- A.4 Modèles globaux de l'ionosphère, y compris l'Ionosphère Internationale de Référence (II); séance du Groupe de travail III.6
- B.4 Analyse des signaux non-stationnaires : Aspects magnétosphériques (II)
- C.4 L'ambiance des signaux perturbateurs (interférences)

Jeudi 14

- m 1.3 Application des méthodes radioélectriques (y compris celles effectuées aux longueurs d'onde laser) aux mesures scientifiques
- 6.4 Dispersion et diffraction; problèmes particuliers (I)
- 7.1 Techniques des ondes millimétriques et sous-millimétriques
- A.6 Diffusion incohérente, résultats nouveaux (I)
- B.5 Analyse des signaux non-stationnaires : Aspects acoustiques et radio-biologiques
- C.5 Caractéristiques du bruit atmosphérique
- am 1.4 Mesures automatiques traitées par ordinateur
- 76.1 Communications optiques : I Dispositifs
- A.6 Diffusion incohérente, résultats nouveaux (II); séance du Groupe de travail III.8
- A.8 Absorption ionosphérique; séance commune des Groupes de travail III.3 et III.5
- B.6 Analyse des signaux non-stationnaires : Aspects astronomiques
- C.6 Acquisition et interprétation d'échantillons d'enregistrement de signaux non-stationnaires et de bruit

Vendredi 15

- m 1.5 Interaction des champs radioélectriques et des systèmes biologiques
- 2.4 Recherche de modèles d'atmosphère applicables à l'absorption par la pluie
- 48.1 Couplage de l'énergie propagée suivant le mode whistler entre l'extérieur et l'intérieur des conduits magnétosphériques

- 5.4 Mesures de précision de position
- 67.1 Communications optiques : II Systèmes
- A.7 La région D, y compris la propagation VLF et ELF
- A.5 Effets de scintillation ionosphérique et irrégularités de la région F (I)
- am 1 Bus. 1 Séance de travail
- 2 Bus. 2 Séance de travail
- 48.2 Rapport du Groupe de travail IV.1 sur la propagation des sifflements dans la magnétosphère
- 5 Bus. 2 Séance de travail
- 6 Bus. 2 Séance de travail
- 7 Bus. 2 Séance de travail
- 8 Bus. 2 Séance de travail
- A.5 Effets de scintillation ionosphérique et irrégularités de la région F (II); séance du Groupe de travail III.2 et des sous-groupes III.2.1 et III.2.2
- D.1 L'enseignement de l'électromagnétique et de la science des télécommunications

Lundi 18

- m 1.6 Comparaison internationale des étalons de mesure
- 2.5 Théorie et résultats expérimentaux relatifs à la dépolarisation par la pluie
- 48.3 Expériences magnétosphériques actives mettant en jeu les ondes radioélectriques et les ondes de plasma
- 5.5 Sources de continuum non-résolues
- 6.5 Guides d'ondes millimétriques et optiques
- 7.2 Dispositifs transistorisés pour hyperfréquences
- A.10 Traitement des données dans la recherche ionosphérique (I); séance du Groupe de travail III.4
- A.11 Problèmes de la propagation ionosphérique dans les radio-communications (I)
- C.7 Orages, description et localisation
- am 17.2 Jonction de Josephson considérée comme un composant des systèmes de mesure électronique
- 2 Bus. 3 Séance de travail
- 48.4 2^e séance du Groupe de travail IV.1 sur la propagation des sifflements dans la magnétosphère *ou* 2^e séance de travail (provisoire)

- 5.6 Réalisations nouvelles dans les observatoires et laboratoires
- 6.6 Dispersion et diffusion, problèmes particuliers (II)
- A.10 Traitement des données dans la recherche ionosphérique (II)
- A.11 Problèmes de la propagation ionosphérique dans les radio-communications (II); séances des Groupes de travail III.9 et III.10
- C.8 Le bruit complexe et le brouillage dû à l'environnement

Mardi 19

- m 1.7 Rapports et conclusions des Groupes de travail I.1 sur les Laboratoires nationaux d'étalons et I.2 sur la Pollution électromagnétique
- 2.6 Nouveaux sujets
- 3 Bus. 2 Séance de travail
- 48.5 Nouveaux sujets
- 6.7 Antennes pour communications par satellites
- 6.8 Simulation sur ordinateur des systèmes de communication
- A.12 Phénomènes ionosphériques liés à la magnétosphère; Nouveaux sujets; séance de travail de la Commission III
- C.9 Rapports : Groupe de travail sur les Bruits industriels, CISPR, CCIR.

SÉANCES ADMINISTRATIVES

AOÛT

vendredi 8	matinée	Bureau
	après-midi	Conseil
samedi 9	toute la journée	Conseil
dimanche 10	matinée	Présidents (et Vice-Présidents) des Commissions (Comité de Coordination)
lundi 11	matinée	Séance plénière d'ouverture
samedi 16	matinée	Conseil
mardi 19	après-midi	Séance plénière de clôture
mercredi 20	matinée	Bureau

MEETING OF URSI BOARD OF OFFICERS

The Board of Officers met in Brussels on 26 and 27 March and the principal discussions are summarised below.

KEEVE M. SIEGEL.

At the beginning of the meeting the President referred to the great loss sustained by URSI through the recent death of Prof. K. M. Siegel, Chairman of Commission VI. Those present stood in silence to honour his memory.

It was agreed to ask Prof. Lottrup Knudsen (Vice-Chairman) to assume the functions of Acting Chairman. The Board supported a suggestion made by Prof. Knudsen that Prof. Stumpers should be invited to take the Chair at the Business Meetings of Commission VI.

REORGANISATION OF URSI.

Following the meeting of the Board in December 1974, a document, containing draft proposals, was sent to all Member Committees in January 1975 (URSI-M501, M502). In the light of the generally favourable replies received from the Committees and from several Chairmen of Commissions, the Board agreed on a slightly revised set of proposals which will be submitted to the URSI Council in Lima.

These proposals, with an extract from the Secretary General's Report to the Council, are reproduced in Appendix 1 on p. 21.

ELECTION OF SECRETARY GENERAL.

The President reported that, in response to his letter of 27 January 1975, the URSI Committees in France, UK and USA had proposed candidates (P. Misme, F. Horner and J. W. Herbstreit respectively) who would be prepared to act as Secretary General of URSI in an honorary capacity while continuing with their present careers. All the candidates had expressed the opinion that, if elected, they would wish to maintain the URSI Secretariat in Brussels under the direction of the Administrative Secretary (Mme Stevanovitch).

Several Committees had expressed the view that it would be undesirable to replace the present Secretary General immediately after the Lima

Assembly when important decisions will probably be made regarding the reorganisation of the Union.

It was agreed to suggest to the Council that one of the three honorary candidates be elected, but that the transfer of responsibilities from the present Secretary General should be deferred until an agreed date.

FINANCES.

Accounts 1974

The audited accounts of income and expenditure for the year 1974 were approved. It was noted that the accounts for the 3-year period 1972-1974 would be submitted to the URSI Council in Lima.

Budget 1976-78.

It was agreed to make several recommendations designed to reduce expenditure during the next three years. These have been incorporated in the Report of the Secretary General which will be considered by the URSI Council. The relevant section of this Report is reproduced in Appendix 2 on p. 25.

NEXT MEETING.

The Board of Officers will meet in Lima on 8 August 1975.

Appendix 1

REORGANISATION OF URSI

Since the General Assembly in 1963, the reorganisation of URSI has been a subject for debate in the URSI Council, as well as at meetings of successive Boards of Officers and Chairmen of Commissions. The many differences of opinion and controversies about questions of secondary importance have often tended to obscure the direction in which the discussions were proceeding and even their objective. Nevertheless, it seems safe to say that the ultimate goal has been to identify and to define more clearly the branch of science which is the primary responsibility of URSI as a member of the group of Unions adhering to ICSU. It is not sufficient to quote, as definitions, the English terms "scientific radio" and "radio

science” or the French adjective “radio-scientifique” since all these have many different interpretations.

It has even been suggested that URSI is not concerned with any branch of science, but rather that it is a Union concerned with certain techniques, and particularly with the application of the theories and practices of the radio engineer to the needs of research workers in the main disciplines of science. In support of this point of view, it is admitted that in branches of science such as astronomy, geophysics and meteorology, the application of radio techniques represents an important addition to the existing range of methods used for acquiring observational data. But it is pointed out that these branches of science remain the primary responsibility of the Unions, other than URSI, that are interested in the study and interpretation of information and observational data acquired using all techniques, including radio methods.

During the discussions between the URSI Board and the representatives of the URSI Commissions in 1973 and 1974, the idea emerged that the field of study peculiar to URSI was the scientific basis for the transmission of information from one point to another by means of electromagnetic waves : in other words, radiocommunications. This is equivalent to a reiteration, using current terminology, of the original objective of the Union, adopted in 1919, namely “to develop the scientific studies in connection with radiotelegraphy” with particular reference to research necessitating international cōoperation.

Radiotelegraphy now represents only one of a great many methods of communicating information by means of radio waves. On the other hand, the word “radiocommunications” can now be regarded as having a much broader meaning than it formerly had. For example, the acquisition of information about the characteristics of distant passive objects, through the use of radar, can legitimately be regarded as a special type of radiocommunications system which is widely used in geographical, geophysical and other branches of research. Similarly, in astronomy, the study of celestial bodies through their radio-frequency emissions involves techniques and methods of interpretation which demand considerable use of the theory and practice of radiocommunications. Thus, if URSI decides to reidentify itself with the scientific basis of radiocommunications, such a decision will not exclude the maintenance of appropriate contacts with the ITU in the field of telecommunications, and the Unions of ICSU concerned with other scientific disciplines.

At its meeting in December 1974, the URSI Board agreed on several draft proposals for the reorganisation of URSI and these were sent for

comment to all Member Committees and to the Chairmen and Vice-Chairmen of Commissions in January 1975. In the light of the replies received, the Board agreed at its meeting in March 1975 on a revised list of proposals for submission to the URSI Council in August 1975. The draft resolution incorporating these proposals is reproduced below.

The proposals refer principally (a) to the reorientation of the activities of the Union and to some consequential changes in the Commissions arising from the need for some redistribution of effort; (b) to the expansion of contacts between the Union and the scientific community at national level and, at international level, during the General Assemblies and through the organisation of open international symposia.

Proposals relating to the expansion of the activities of the Union or to an increase in the number of Commissions have obvious financial implications. These have not been ignored and have been borne in mind in the preparation of the provisional Budget for the period 1976-1978.

DRAFT RESOLUTION SUBMITTED TO THE URSI COUNCIL
BY THE BOARD OF OFFICERS

The URSI Board of Officers,

considering that it was authorised by the XVII General Assembly to make recommendations for the reorganisation of the Union;

recommends the adoption of the following resolution by the URSI Council :

The URSI Council,

resolves

1. that the primary objective of URSI shall be to stimulate and to coordinate, on an international basis, studies of the scientific aspects of telecommunications using electromagnetic waves (radiocommunications);
2. that the activities of URSI be concentrated on the topics listed in Annex 1 and that this list be reviewed at each General Assembly;
3. that the Commission structure shown in Annex 2 be adopted at the XVIII General Assembly;

4. that, in future, the organisation of symposia that are open to full participation by all interested scientists be a major part of the scientific activities of URSI;
5. that, as part of its activities, each Commission of URSI be asked to propose to the URSI Council at each Assembly an Open Symposium, relevant to its field, to be held before the end of the ensuing Assembly, and to make suggestions for the membership of a Programme Committee;
6. that the Board of Officers be made responsible (a) for designating the Chairman of a Programme Committee for each Open Symposium; (b) for deciding which symposia should be held at the time of the ensuing Assembly, in accordance with the general rule that the symposia of widest interest should be selected for Assemblies;
7. that Member Committees of URSI be urged to mobilise all the interest that exists in their respective countries in the field of radiocommunications science and to project this interest onto the international scene at URSI Open Symposia held at or between General Assemblies;
8. that the President be empowered to engage in discussions with international and national organisations concerned with telecommunications, including remote sensing and optical communications, with a view towards exploring and implementing avenues of cooperation;
9. (a) that other organisations interested in promoting international symposia on aspects of telecommunications be invited to cooperate in an arrangement whereby all such symposia fit into a reasonable overall schedule that not merely avoids formal duplication but constitutes sound international planning;
(b) that URSI should seek to establish a permanent coordinating body to implement this concept, and should publish at frequent regular intervals the agreed list of such meetings for several years in advance;
10. that the Statutes of URSI be modified so as to eliminate any references, actual or implied, which could be interpreted as imposing restrictions on the procedure of organisation of scientific conferences of the Union, or automatic restrictions on who may attend.

Annex 1

RECOMMENDED TOPICS

- A. Electromagnetic measurement methods, including radio standards and radiobiology
- B. Electromagnetic theory, including antennas and waveguides
- C. New developments in devices for telecommunications, including radioelectronics and microwave sources
- D. Information theory, statistical fluctuation problems, signal processing and computer methods
- E. Communications systems and system theory, including circuits
- F. The electromagnetic noise and interference environment
- G. Remote sensing
- H. Radioastronomy
- I. Wave phenomena in natural non-ionized media, including radio-meteorology and radio-oceanography
- J. Wave phenomena in ionized media, particularly in the Earth's ionized environment, including ionospheric soundings and radio communications (as far as the geophysics of ionized media is concerned, only those aspects which relate to the propagation of radio waves should be included)
- K. The application of telecommunications science to problems of ITU, through the channels of CCIR and CCITT
- L. The teaching of the science of telecommunications (theory and practice).

Annex 2

URSI COMMISSIONS

Identification

Letter

Provisional Title

- | | |
|---|---|
| P | Electromagnetic measurements (including radio standards and radiobiology) |
| Q | Electromagnetic theory (including antennas and waveguides) |
| R | Communications systems and system theory (including cir- |

- cuits); information theory and signal processing (including fluctuation problems)
- S Telecommunications devices (including radioelectronics)
- T Electromagnetic noise and the interference environment
- U Wave phenomena in natural non-ionized media (including radiometeorology, radio-oceanography and remote probing of non-ionized media)
- V Wave phenomena in ionized media (particularly in the Earth's ionized environment and including remote probing of ionized media)
- W Radioastronomy (including remote probing of celestial objects).

Notes :

1. Commissions P, S, T, U and W replace, respectively, Commissions I, VII, VIII, II and V, usually with some broadening of the area of interest.
2. Commissions Q and R cover the area of interest of Commission VI.
3. Commission V covers the present areas of interest of Commissions III and IV.
4. It was not considered appropriate to create a Commission to deal with ITU (CCIR and CCITT) matters or with the teaching of telecommunications science since each of these subjects is of interest to several Commissions. It was agreed instead to recommend the formation of :
 - (a) an URSI-ITU Committee (including perhaps representatives of certain CCIR and CCITT Study Groups) whose tasks would be to ensure the maximum cooperation between URSI and ITU and to organise symposia on topics of current interest to CCIR and CCITT;
 - (b) an URSI Committee to deal with the teaching of electromagnetics and telecommunications science.

Appendix 2

BUDGET : 1976-1978

1. — GENERAL CONSIDERATIONS.

During the three-year period 1972-1974, expenditure exceeded income by \$ 26,000. It has been possible for URSI to maintain the level of acti-

vities approved by the Council in Warsaw in 1972 thanks only to the existence of the Reserve Fund which had been built up over a considerable number of years. However, in view of the withdrawals already made from the Reserve Fund, and the heavy travel and other expenses relating to the Assembly in Lima, the Reserve Fund will have been practically exhausted by the end of 1975.

It will, therefore, be essential to ensure that the total expenditure approved by the Council for the period 1976-1978 shall not exceed the income received during this period. This objective can be achieved only by approving an increase in income or a decrease in expenditure, or a combination of both these measures.

In the past, the expenditure budgets of URSI assumed an increase in costs of 4.5 % per year. This rate is no longer realistic and the Board of Officers has recently recommended the adoption of a rate of 15 % per year in the preparation of the budget for 1976-1978. It follows that, if the present level of activity remains unchanged, expenditure will be about 1.52 times greater than it would have been under earlier conditions. If this expenditure is expressed in US dollars, a further allowance must be made for the decrease in the value of the dollar to about 77 % of its value in August 1972. Thus, assuming no major change in URSI's activities and administrative structure, total expenditure (expressed in dollars) during the period 1976-1978 will increase by a factor of 2 ($= 1.52/0.77$). If this increase were entirely borne by the Member Committees of the Union, the unit contribution payable by Committees in Category 1 would increase from \$ 250 to \$ 500 and the annual contribution of Committees in Category 6 would rise from \$ 8,000 to \$ 16,000. The Board of Officers believes that such increases would not be acceptable to most Committees and recommends the Council to consider certain reductions in expenditure which are discussed in the next section.

2. — REDUCTIONS IN EXPENDITURE (SCIENTIFIC ACTIVITIES).

In calculating the amounts discussed below, it is assumed :

- (a) that the rate of inflation will be 15 % per year until 1978, and 7.5 % per year from 1979 to 1981;
- (b) that the value of the US dollar will recover to its level at 31 December 1974 (\$ 1 = 37.5 B.Fr.);
- (c) that the normal level of scientific activity (excluding the cost of the General Assembly) is defined by the expenditure approved by the

Council in 1972, namely \$ 23,000 for the year 1974 (= \$19,600 × 44/37.5).

In order to reduce expenditure on scientific activities, the Board of Officers has made several provisional recommendations for consideration by the URSI Council. These are :

- (a) that symposia sponsored by URSI should be fully self-supporting, thereby eliminating the need for grants by the Union (Table 1, Item 1.2);
- (b) that the meeting of the Coordinating Committee convened prior to each Assembly be discontinued and that the programme for the Assembly be arranged by correspondence (Table 1, Item 1.3);
- (c) that URSI should no longer pay the travel expenses of the 8 Vice-Chairmen of Commissions in connection with the Assembly at which they become Chairmen, save in exceptional circumstances (Table 1, Item 2.3).

3. — REDUCTIONS IN EXPENDITURE (ADMINISTRATION).

The Board has considered several possible ways of reorganising the URSI Secretariat so as to reduce the expenditure on administration. For many years URSI has maintained a permanent Secretariat in Brussels, with a Secretary General and Administrative Secretary who work full-time and who deal with practically 100 % of the administrative and financial affairs of the Union

At present the Treasurer delegates full responsibility for the management of the financial affairs of the Union to the Secretary General. In addition, the Secretary General has been responsible for the activities of other bodies in which URSI is interested : for example, in his capacity as Secretary and Treasurer of the FAGS Council and of IUCAF. It is estimated that if, in future, he were to confine his activities to those concerned with his statutory responsibilities, and if there were some delegation of responsibility to the Chairmen of the URSI Commissions, then the Secretary General would be capable of dealing with URSI business on a half-time basis instead of full-time as at present.

In view of this, the Board has investigated the possibility of finding an honorary Secretary General who would remain in his normal employment during his term of office, but would agreed to spend part of his time in dealing with the affairs of URSI. Following enquiries made by the President after the Board meeting in December 1974, three scientists who

would be willing to act as Secretary General in an honorary capacity have been proposed by Member Committees.

The Board has considered also the question whether it is necessary for URSI to maintain its permanent Secretariat in Brussels, especially if it is decided in future to elect Secretaries General living and working in countries other than Belgium. It is generally agreed that, whatever decision is reached concerning the Secretary General, it will be desirable, at least for the sake of continuity, to maintain the Brussels Secretariat, and especially in view of the extensive knowledge and experience in URSI affairs of the present Administrative Secretary. This view is shared also by the candidates for Secretary General.

Several Member Committees have proposed that the present Secretary General remain in office until 1978 on the grounds that it would be unwise to change the Secretary General immediately after the reorganisation of the Union which will probably be approved in 1975.

Pending further consultations between the President and the candidates for the post of Secretary General, the Board of Officers proposed (in March 1975) that the services of the present Secretary General be retained for about 18 months so that he can deal with the publication of the Proceedings of the Assembly in 1975 and with the implementation of decisions of the Council requiring early action. The incoming Secretary General and Treasurer would be responsible for future planning, including the preparations for the Assembly in 1978.

The recommendations of the Board, summarised in Sections 2 and 3, would result in an estimated total expenditure (including allocations for the 1978 and 1981 Assemblies) of \$ 261,600 during the three-year period 1976-1978. After allowing for the expected income from ICSU/UNESCO grants and interest on investments, the net balance which must be found from other sources is \$ 225,600. The basis on which this estimate has been made is explained in Table 1.

4 — THE UNIT CONTRIBUTION.

In this Section, it is assumed that the net balance referred to in Section 3 will be provided out of the annual contributions paid by the Member Committees of the Union. At present the number of unit contributions which a Committee pays annually varies from 1 unit in Category 1 to 32 units in Category 6. If the Committees remain in their present Categories during the next three years, the total number of units paid will be 669.

TABLE 1. *Provisional Expenditure Budget : 1976-1978*

(\$ 1 = 37.5 BFr.)

	<i>Expenditure</i>		<i>Equivalent Unit Contribution</i> \$
	\$ (000)	\$ (000)	
1. <i>Annual Scientific Activities</i>			
1.1 Warsaw budget 1972		105.6	162
1.2 less grants to symposia	—18.4		
1.3 less travel to Coordinating Committee 1977	—15.2		
1.4		—33.6	—52
1.5 <i>Total : Annual Scientific Act.</i>		72.0	110
2. <i>General Assemblies</i>			
2.1 XIX Assembly 1978 (100 %)	47.0		
2.2 XX Assembly 1981 (33 %)	19.5		
2.3 less travel expenses of 8 Vice-Chairmen of Commissions	66.5 —17.8		
2.4 <i>Total : General Assemblies</i>		+48.7	+75
2.5 <i>Total : All Scientific Act.</i>		120.7	185
3. <i>Administration</i>			
3.1 Present Secretary General retained half-time for 3 years. Brussels Secretariat maintained	156.7		
3.2 less savings if present Secretary General is retained half-time until June 1977	—15.8		
3.3 <i>Total : Administration</i>		140.9	216
4. <i>Scientific Activities and Administration</i>			
4.1 <i>Total : Scientific Activities plus Administration</i>		261.6	401
4.2 less ICSU/UNESCO Grants	—24.0		
4.3 less interest on investments	—12.0		
		—36.0	—55
4.4 <i>Net expenditure</i>	\$ (000)	225.6	\$ 346

Note 1 : The equivalent unit contribution for each item is equal to the amount shown multiplied by 1.025/669. In their present Categories, Member Committees pay 669 unit contributions in 3 years and 2.5 % of the amount received is paid to ICSU

Note 2 : The average value of the unit contribution could be further reduced by making other administrative arrangements :

	<i>Further Reduction in Unit Contribution</i> \$
3.4 Incoming Secretary General and Treasurer assume their responsibilities in 1975. Brussels Secretariat maintained	—16
3.5 Incoming Secretary General and Treasurer assume their responsibilities in 1975 and agree to provide all secretarial facilities. Brussels Secretariat closed	—25
	<hr/>
Total reduction	\$ —41

For several years, ICSU has made an annual charge of 2.5 % on the income received by the Unions from their Member Committees. Hence, in any calculation of the value of the unit contribution, an allowance must be made for this charge. For the years 1976-1978, the average value of the unit required to cover the net expenditure is : $\$ 225,600 \times 1.025/669 = \$ 346$. This represents an increase of 38 % over the present value of the unit : \$ 250. It is important to note that if it is considered to be impracticable to increase the unit as from 1976, then the value of the unit in 1977 and 1978 would rise to \$ 394 as shown below in Column B :

<i>Year</i>	<i>A</i> <i>Unit</i> \$	<i>B</i> <i>Unit</i> \$	
1976	346	250	(since 1975)
1977	346	394	
1978	346	394	
	<hr/>	<hr/>	
Total	\$ 1,038	\$ 1,038	

If the incoming Secretary General and Treasurer could agree to provide all the secretarial facilities they will require, the Secretariat in Brussels could be closed and the unit contribution could be reduced by a further \$ 41 to about \$ 300 (Table 1, Items 3.4 and 3.5). However, this figure can hardly be regarded as realistic since it makes no allowance for the need for continuity and for the orderly transfer of responsibilities from the outgoing to the incoming Secretary General after the Assembly in 1978.

In IUGG, continuity is provided by the overlap of two years between the outgoing and the incoming Secretaries General. During this period,

the incoming Secretary General holds the post of Assistant Secretary General. In IAU, continuity is assured by the fact that there are two permanent members of the IAU Secretariat who are transferred, after the end of every Assembly, from the location of the outgoing to the location of the incoming Secretary General. In this document, no attempt has been made to forecast what arrangements could be made by URSI to ensure continuity in the event of a decision to close the permanent Secretariat in Brussels.

5. — THE UNIT OF CURRENCY.

Member Committees make annual contributions to URSI which are specified in terms of the US dollar. The dollar was a satisfactory unit until 1971 when its value, relative to many other currencies, began to decrease. By the end of 1974, its value had fallen to only 70 %-80 % of its value in mid-1971. Its value relative to the Belgian franc was 75 % in December 1974 and, in consequence, the increases in the unit contribution to \$ 200 in 1972 and to \$ 250 in 1975 have been compensated by the fall in value of the dollar.

Although the income (expressed in dollars) in 1975 will be 25 % greater than in 1972, its value will be about 4 % less (see below).

<i>Unit Contribution payable by Member Committees</i>		
<i>Year</i>	<i>Unit Contribution</i>	<i>Value in Belgian francs</i>
	\$	
1958-63	125	6,250
1964-67	150	7,500
1968-71 (14 June)	175	8,750
1971 (31 December)	175	8,225
1972 (31 December)	200	8,800
1973 (31 December)	200	7,900
1974 (31 December)	200	7,500
1975 (23 April)	250	8,500

Suggestions have been made from time to time for the replacement of the US dollar by one of the currencies which have been more resistant to international economic conditions since 1971 : for example, the Swiss franc or the Belgian franc (see below).

Changes in the value (relative to the Belgian franc) of national currencies between 15 June 1971 and 31 December 1974

<i>Currency</i>	<i>Relative value</i>
Swiss franc	1.12
German mark (BRD)	1.07
Austrian schilling	1.05
Dutch guilder	1.02
Norwegian crown	1.00
Belgian franc	1.00
Danish crown	0.97
Czechoslovak crown	0.92
Spanish peseta	0.92
Swedish crown	0.91
Japanese yen	0.90
French franc	0.89
Russian rouble	0.89
Australian dollar	0.88
Portuguese escudo	0.86
Canadian dollar	0.82
US dollar	0.75
Pound sterling (UK)	0.73
Indian rupee	0.71
Italian lira	0.70

The choice of any single currency necessarily involves some risk and it does not follow that the strongest currencies during the past 4 years will, in future, retain their present position relative to the US dollar. In view of this, it has been suggested that a composite unit, based on the weighted average value of a number of currencies, might be preferable. Airlines which adhere to IATA base their fares on such a unit and its possible adoption in URSI is being studied.

The choice of a unit other than the US dollar will not invalidate the estimates made in the Provisional Budget for the period 1976-1978. It will, however, be necessary to express the unit contribution that is finally adopted in terms of the new currency using the rates of conversion in force on 31 December 1974. For example, \$ 346 = 948 Swiss francs or 12,975 Belgian francs.

If it is decided to retain the US dollar as the unit, an adjustment should be made for any change in the value of the dollar since the end of 1974.

As at 31 March 1975, there had been a further fall in its value of about 9 %; if there is no recovery from this level in August 1975, it will be necessary to increase the unit contribution from \$ 346 (Dec. 1974) to \$ 382 (March 1975).

THE URSI REVIEW OF RADIO SCIENCE

Note by Secretary General :

This document has been prepared for consideration by the Publications Committee which will be formed by the URSI Council in August 1975. It has been published in the *URSI Information Bulletin* so as to permit some advance discussion of the question whether or not URSI should publish a review of some kind.

* * *

At the General Assembly of URSI in 1969, the Publications Committee noted the high cost (\$ 11,500) of publishing the *Proceedings* which normally consisted of eight separate parts. About 75 % of the cost (\$ 8,600) was attributable to reproduction of the National Reports submitted to the Assembly by Member Committees of the Union. The Committee agreed that there were considerable difficulties in ensuring uniform quality in the content and presentation of these Reports. It was concluded that, in future, it would be preferable not to reprint the National Reports in the *Proceedings* but, instead, to prepare "a high-quality document designed to provide a global picture of progress in radio science".

The intention was to arrange for the publication of this document in *Radio Science* at an estimated cost of \$ 7,500. A procedure was recommended for the designation of several "international authors" for each Commission. Each author was to review a given range of topics using, as basic information, subsidiary reviews provided by national specialists in each of the 37 Member Committees of URSI. Several hundred individuals would have been involved in the preparation of the series of reviews, but the procedure recommended proved to be unacceptable to the Chairmen of Commissions. In the end, the text for the 1972 edition of the review was compiled by the Chairmen themselves and was based on abbreviated reports received, in theory, from all Member Committees. A considerable amount of additional editing was necessary in the URSI Secretariat and, in view of the high cost of printing the unexpectedly large volume of

material in *Radio Science* as originally proposed, it was published by URSI in 1972 in a volume entitled *Review of Radio Science 1969-1971* (Ed. Minnis and Bogitch) at a cost \$ 5,580.

Criticisms of this volume were directed at the nature of the contents, the way in which the information was presented, and the cost to URSI. Doubts were expressed also about the value of the *Review* as a whole to the scientific community. It would be unjust to place the responsibility for the defects which gave rise to these criticisms on the Chairmen of Commissions who prepared the text. These defects are attributable rather to the absence of clear directions concerning the character of the information to be contained in the *Review*, and also the section of the scientific community for whom it was intended. In any discussions on future editions of the *Review*, it will be necessary for the Publications Committee to distinguish clearly between (a) national reports on recent activities in a given country, and (b) international reviews of the most important events in a given field of research.

A national report is prepared primarily for reasons of prestige and its contents are usually comprehensive rather than selective. It includes collected reports on recent theoretical and experimental results and contains full lists of publications. Such reports are most appropriate for administrators and others who require fairly complete factual information about the activities in a given country, presented in an uncritical manner.

On the other hand, an international review ought to be concise and it should concentrate attention on the outstanding events and the most significant advances in a given field, irrespective of the countries in which they occur. It follows that the author must be selective in his approach and he must be free to adopt a critical attitude when making comparisons between different sets of results. Such a review can best be prepared by a scientist who is himself sufficiently familiar with the field and with recent publications in the recognised scientific journals. The author must, however, be told clearly whether the review is intended to be read by many scientists, including those who are not closely concerned with the subject, or by a smaller number of research workers in or close to the field.

Unfortunately, in URSI, it has been assumed that national reports provide the appropriate basic material for the preparation of an international review. If an author is obliged to base his review on such reports, he will necessarily be embarrassed by the conflicting requirements of, on the one hand, adopting a selective and critical attitude and, on the other, of referring to the work done in all the countries which submitted reports.

The incompatible nature of these two objectives seems to be the source of the difficulties encountered by the authors of the 1972 edition of the *Review*.

Since the 1975 edition is still in preparation, it is not possible to comment on it in this document. However, the critical attitude adopted by the Chairmen of Commissions at their meeting in 1974 suggests that the arguments for and against the publication of future editions of the *Review* must be seriously considered by the Publications Committee and the URSI Council. If it is decided to continue publication, the first essential will be to make clear recommendations concerning the objectives of the next edition, the character of its contents, and the readers to whom it is addressed. It will be necessary also to collaborate with the Chairmen of Commissions at an early stage in the planning in order to ensure their willing cooperation in the preparation of the text.

The financing of the cost of publication also requires consideration. The 1972 volume was paid for out of URSI funds, but it will be necessary to recover the cost of the 1975 edition from the Registration Fees payable by the participants at the General Assembly in Lima.

Since this document was written, the Vice-Chairman of Commission I (Dr. H. M. Altschuler) has submitted his views on the need for an agreed policy before any new edition of the *Review* is contemplated. In his opinion, the *Review* for a given Commission, should give a reasonably concise history of recent progress and accomplishments. It should be selective and should concentrate on fundamental advances and novel approaches to problems, especially in fields where there has been some recent concentration of activity. The Review should not be addressed to specialists, but rather to knowledgeable members of the scientific community such as :

- (a) scientists who are not closely concerned with the field in question, but who wish to acquire information about the current trends in research;
- (b) educators who wish to know which subjects are of current interest to the research community;
- (c) managers of research organisations who need to evaluate their current activities.

MICROWAVE SCATTERING AND EMISSION FROM THE EARTH

The Proceedings of the URSI Specialist Meeting on Microwave Scattering and Emission from the Earth (Berne, 23-26 September 1974) have been published. The 326-page volume contains 35 scientific contributions on scattering and emission from water surfaces, sea-ice, land-ice, snow, soil, vegetation and geological features. Some of the papers deal with theoretical studies and with considerations on systems and techniques.

Copies are available at a cost of 30 Swiss francs from :

Secretariat, Institute of Applied Physics,
University of Berne,
Sidlerstrasse 5,
CH — 3012 Berne, Switzerland.

INTERNATIONAL SYMPOSIUM ON INFORMATION THEORY

Notre Dame, USA, 28-31 October 1974

This Symposium was sponsored by the IEEE Information Theory Group and URSI. It had about 230 participants from USA (180), Canada (14), Japan (6), USSR (5), Italy (5) and smaller numbers from Argentina, Belgium, Brazil, Denmark, Egypt, France, Germany, India, Israel, Netherlands, Norway and Sweden.

After the welcoming remarks by the President of Notre Dame University, Rev. Th. M. Hesburgh, a keynote address was given by A. D. Wyner (Bell Laboratories), on common information of two dependent random variables. Two long papers followed, one by Hellman on the information theoretic approach to cryptography, and one by Chaitin on a measurement of programme size complexity equivalent to entropy.

The Symposium then split into three parallel sessions mostly with 12-minute papers. Much attention was given to optical communications and quantum effects. Kennedy and his co-workers established the existence of the optimum quantum detector. Hoversten (USA), and Kamal and Malaviya (India) studied the fading optical channel. In the estimation

session we noted a paper by Tanabe on resolution of noisy data by Akaike's information criterion. In the coding session much attention was given to Goppa codes. A maximum *a posteriori* estimator for digital, m -ary Markov sequences of pulses in the presence of finite intersymbol and additive white Gaussian noise was discussed by Becker. Stochastic processes and problems of band limitation, detection theory (including Viterbi algorithm and Walsh functions), algorithms for data processing and computation, pattern recognition and learning (recognition of hand- and machine-written addresses) and channel coding were the subjects of Tuesday's sessions. Communication systems, multiple sources and channels (broadcast channels), rate distortion theory, quantization and source-coding algorithms (delta-modulation), a second session on estimation theory, and constructive coding were the subjects discussed on Wednesday.

Each day had a special lecture : Information problems in economics by Spence, on Monday; the Wiener Memorial lecture by Kailath on Tuesday (especially results of Wiener theory that led to recent developments); the banquet speech by David on Wednesday.

The closing session on Thursday provided a climax in the Shannon lecture by David Slepian, who discussed, in depth, the paradoxes inherent in bandwidth limitation. The rest of this session was devoted to a new approach to sampling by Ericson and Johansson (Sweden) and to a discussion of the automatic speech recognition work at IBM's Thomas Watson Research Centre (Jelinek, Bahl and Mercer).

Abstracts of papers were available in an 87-page booklet which is available from IEEE (Catalog No. 74 CHO883-9 IT). This was a very successful symposium, well led by the Co-chairmen, R. T. Chien and J. L. Massey, and well prepared by the Programme Committee (Baggeroer, Cover, Elias, Kennedy, Lucky, Viterbi and Wong) assisted by an international advisory committee.

F. L. H. M. Stumpers
URSI Representative.

WORLD TELECOMMUNICATIONS FORUM

Geneva, 6-8 October 1975

The World Telecommunications Forum is being organised by ITU in cooperation with several other international and national bodies, including URSI.

Technical plenary meetings on subjects of broad interest will be held on the mornings of 6, 7 and 8 October. Parallel technical sessions will be held every afternoon and will deal with specialised aspects of the subject. The preferred languages will be English and French.

The provisional programme is outlined below.

- 6 October The world telecommunication network
National and regional network development
Optical communication systems
Mobile radio
- 7 October Data communication and video systems
Integrated switching and transmission; digital transmission
Computer and data communication
Satellite developments
- 8 October Radiocommunications
Microwave relay, including digital transmission
New video and information services
Broadcasting : sound and television.

Further information on the Forum is available from :

Mr. R. C. Kirby,
Chairman, Technical Symposium,
World Telecommunication Forum (ITU),
CH — 1211 Geneva 20, Switzerland.

Prof. Dr. F. L. Stumpers,
Chairman, Technical Programme Committee,
World Telecommunication Forum,
N. V. Philips' Gloeilampenfabrieken,
Research Laboratories,
Eindhoven, The Netherlands.

Mr. A. E. Joel, Jr.
President, IEEE Communications Society,
Bell Telephone Laboratories,
Room 2C-632,
Holmdel, N.J. 07733, USA.

RADIO SCIENCE IN THE USA

The US National Committee of URSI will hold its annual meeting from 20-23 October 1975 at the University of Colorado, Boulder (Col.).

Technical Sessions covering the field of URSI Commissions I-VIII will be held, but papers will be especially welcome on the following subjects :

Measurement standards for radio noise; Biological effects of electromagnetic fields; Wave measurements to sense hidden structures; Extra-terrestrial techniques for measuring present crustal movements; Remote sensing; Acoustics, optical, radio; Radio oceanography; Radar meteorology; Radiometry; Turbulence; Space telecommunications; Millimeter waves and beyond; Ionospheric scintillations; ELF propagation; Interference to radio astronomy; Ranging accuracy for future planetary orbiters; Communication channels-characterization, measurement and simulation; Communication via optical fibers; Integrated optics; Communication networks; Man-made noise; Effects of noise on system performance; Sub-surface telecommunications; New developments in devices for telecommunications; Information theory, statistical problems and signal processing; Application of telecommunication science to problems of CCIR and CCITT.

Intending speakers are requested to send their abstracts, and two copies, *not later than 14 July 1975* to :

Prof. James R. Wait,
Chairman, USNC/URSI Technical Program,
Room 242, RB 1, C.I.R.E.S.,
University of Colorado,
Boulder, CO 80302, USA.

Abstracts should give title of paper, name(s) of author(s), affiliation, City and State. They should be typed using single spacing, and should contain 200-245 words in lines 7" in length.

TEACHING OF ELECTRONIC ENGINEERING

A Conference on *The Teaching of Electronic Engineering in Degree Courses* will be held at the University of Hull, UK, from 7 to 9 April 1976.

The Organising Committee invites contributions on the following topics :

- Assessment in course work, examinations and laboratory classes.
- Educational Technology. Programmed learning; audio visual aids in lectures; library-based non-book material; new developments.
- The Electronic Engineer and the Computer. Use in the teaching process.

- Employment Prospects. Comparative studies and predictions.
- Polytechnic Degree Courses. Course structure, laboratory classes, teaching techniques.
- Postgraduate Education. Aims and philosophy; lecture courses.
- The Rôle of Industry. Project schemes; postgraduate co-operation; requirements of, and from, graduates.
- Student Intake. Admissions techniques and criteria; course publicity; recruiting methods, interviewing and selection procedures.
- Undergraduate Courses in Universities. Recent innovations reflecting changes in industry; course structure and content.

Intending contributors must submit a synopsis (not exceeding 500 words) by 8 September 1975 to :

Conference Secretary,
Department of Electronic Engineering,
The University,
Hull HU6 7RX, United Kingdom.

Copies of the programme will be available early in 1976.

CYBERNETICS AND SYSTEMS RESEARCH

The Third European Meeting on Cybernetics and Systems Research will be held in Vienna from 20-23 April 1976. This is the third of a biennial series of meetings organised by the Austrian Society for Cybernetics Studies. Symposia and workshops are being prepared on :

- General systems methodology
- Cybernetics of Cognition and Learning
- Structure and dynamics of socio-economic systems
- Computer linguistics
- Neuro- and bio-cybernetics
- Cybernetics in organization and management
- Engineering systems methodology.

The language used will be English and intending authors are invited to send abstracts of about 200 words to :

Secretariat, Austrian Society for Cybernetic Studies,
Schottengasse 3,
A — 1010 Wien, Austria,

from whom further information is available. The Proceedings of the Meetings held in 1972 and 1974 are available from :

Scripta Books,
30 Craven Street,
London WC2, England.

MEMBER COMMITTEES OF URSI ; URSI COMMISSIONS

Since the publication of the complete lists in Information Bulletin No. 193, notification has been received of the changes and corrections listed below.

It would be appreciated if notification of further modifications could be sent to the Secretary General before mid-November 1975 for inclusion in the next full list which will appear in the December 1975 issue.

The following entries replace the corresponding ones in Bulletin No. 193.

PRESIDENTS AND SECRETARIES OF URSI MEMBER COMMITTEES

BELGIUM :

President : Prof. P. Hontoy, Laboratoire de Radioélectricité, Université Libre de Bruxelles, 50 avenue F. D. Roosevelt, B-1050 Bruxelles.

Secretary : Prof. R. Gonze, Observatoire Royal de Belgique, 3 avenue Circulaire, B-1180 Bruxelles.

HUNGARY :

President : Dr. G. Bogнар, Member of the Hungarian Academy of Sciences, Münnich F. u. 7, H-1055 Budapest V.

Secretary : Prof. K. Géher, Polytechnical University of Budapest, Stoczek u.2, H-1111 Budapest XI.

SCIENTIFIC COMMISSIONS

COMMISSION I ON RADIO MEASUREMENTS AND STANDARDS

USSR : Dr. A. I. Mechannikov, Institute of Radioengineering and Electronics, Ac. Sci., Prospekt Marksa 18, g. Moskva, Centr, GSP-3.

COMMISSION II ON RADIO AND NON-IONIZED MEDIA

Canada : Dr. K. S. McCormick, Communications Research Center, Dept. of Communications, Ottawa, Ontario K1N 8T5.

COMMISSION IV ON THE MAGNETOSPHERE

Nigeria : c/o Dr. Eburn Oni, Department of Physics, University of Ibadan, Ibadan.

COMMISSION V ON RADIO ASTRONOMY

Canada : Mr. N. W. Broten, Astrophysics Branch, National Research Council of Canada, Ottawa, Ontario K1A 0R8.

COMMISSION VII ON RADIO ELECTRONICS

Canada : Dr. A. R. Boothroyd, Department of Electrical Engineering, Carleton University, Ottawa, Ontario.

